

IN THE CLAIMS:

Please amend claims 1 and 13, and please cancel claims 28-42, as set forth below.

1 1. (Currently Amended) A method comprising:
2 depositing a layer of a metal on each of a number of conductors disposed on a surface of
3 a first wafer;
4 aligning the first wafer with a second wafer, the second wafer having a number of
5 conductors disposed on a surface thereof;
6 ~~directly~~ physically contacting the metal layer on each of the conductors of the first wafer
7 with a mating one of the conductors on the second wafer; and
8 forming a bond between the metal layer on each of the conductors of the first wafer and
9 the mating one conductor of the second wafer.

1 2. (Previously Presented) The method of claim 1, further comprising, prior
2 to depositing the metal layer on each of the conductors of the first wafer, removing
3 dielectric material from the surface of the first wafer.

1 3. (Previously Presented) The method of claim 1, further comprising, prior
2 to depositing the metal layer on each of the conductors of the first wafer, removing native
3 oxide from the conductors.

1 4. (Previously Presented) The method of claim 1, wherein the conductors of
2 the first wafer comprise Copper.

1 5. (Previously Presented) The method of claim 1, wherein the metal
2 comprises a metal selected from a group consisting of Silver, Gold, Ruthenium, Osmium,
3 Iridium, Palladium, Rhodium, and Platinum.

1 6. (Previously Presented) The method of claim 1, wherein the bond is
2 formed at a temperature between approximately 100 and 300 degrees Celsius.

1 7. (Previously Presented) The method of claim 1, wherein depositing the
2 layer of metal on each of the conductors of the first wafer comprises:
3 forming a blanket layer of the metal over the conductors and the surface of the first
4 wafer; and
5 removing the metal from at least portions of the first wafer surface.

1 8. (Previously Presented) The method of claim 1, wherein depositing the
2 layer of metal on each of the conductors of the first wafer comprises selectively
3 depositing the metal on each of the conductors.

1 9. (Previously Presented) The method of claim 8, wherein selectively
2 depositing the metal on each of the conductors of the first wafer comprises an electroless
3 plating process, an electroplating process, or a contact displacement plating process.

1 10. (Previously Presented) The method of claim 1, wherein the metal layer on
2 each of the conductors of the first wafer comprises a number of islands.

1 11. (Previously Presented) The method of claim 10, wherein the islands are
2 selectively deposited on each of the conductors of the first wafer.

1 12. (Previously Presented) The method of claim 10, wherein the islands are
2 formed by a process comprising:
3 depositing a blanket layer of the metal over the conductors and the surface of the first
4 wafer; and
5 removing the blanket metal layer from at least portions of the first wafer surface and from
6 portions of each conductor to form the number of islands on each conductor.

1 13. (Currently Amended) A method comprising:
2 depositing a layer of a first metal on each of a number of conductors disposed on a first
3 wafer;
4 depositing a layer of a second metal on each of a number of conductors disposed on a
5 second wafer;
6 aligning the first wafer with the second wafer;
7 ~~directly~~ physically contacting the metal layer on each of the conductors of the first wafer
8 with the metal layer on a mating one of the conductors of the second wafer; and
9 forming a bond between the metal layer on each of the conductors of the first wafer and
10 the metal layer on the mating one conductor of the second wafer.

1 14. (Previously Presented) The method of claim 13, further comprising, prior
2 to depositing the metal layer on each of the conductors of at least one of the first and
3 second wafers, removing dielectric material from a surface of the at least one wafer.

1 15. (Previously Presented) The method of claim 13, further comprising, prior
2 to depositing the metal layer on each of the conductors of at least one of the first and
3 second wafers, removing native oxide from the conductors of the at least one wafer.

1 16. (Original) The method of claim 13, wherein the conductors of each of the
2 first and second wafers comprise the same metal.

1 17. (Original) The method of claim 16, wherein the conductors of each of the
2 first and second wafers comprise Copper.

1 18. (Original) The method of claim 13, wherein the first metal and the second
2 metal are the same.

1 19. (Original) The method of claim 13, wherein the first metal and the second
2 metal are different.

1 20. (Previously Presented) The method of claim 13, wherein each of the first
2 and second metals comprises a metal selected from a group consisting of Silver, Gold,
3 Ruthenium, Osmium, Iridium, Palladium, Rhodium, and Platinum.

1 21. (Previously Presented) The method of claim 13, wherein the bond is
2 formed at a temperature between approximately 100 and 300 degrees Celsius.

1 22. (Previously Presented) The method of claim 13, wherein depositing the
2 metal layer on each of the conductors of at least one of the first and second wafers
3 comprises:
4 forming a blanket metal layer over the conductors and a surface of the wafer; and
5 removing the blanket metal layer from at least portions of the wafer surface.

1 23. (Previously Presented) The method of claim 13, wherein depositing the
2 metal layer on each of the conductors of at least one of the first and second wafers
3 comprises selectively depositing the metal layer on the conductors.

1 24. (Previously Presented) The method of claim 23, wherein selectively
2 depositing the metal layer on each of the conductors comprises an electroless plating
3 process, an electroplating process, or a contact displacement plating process.

1 25. (Previously Presented) The method of claim 13, wherein the metal layer
2 on each of the conductors of at least one of the first and second wafers comprises a
3 number of islands.

1 26. (Original) The method of claim 25, wherein the islands are selectively
2 deposited on the conductors.

1 27. (Previously Presented) The method of claim 25, wherein the islands are
2 formed by a process comprising:
3 depositing a blanket metal layer over each of the conductors and a surface of the wafer;
4 and
5 removing the blanket metal layer from at least portions of the wafer surface and from
6 portions of each conductor to form the number of islands on each conductor.

Claims 28-42 (Canceled)